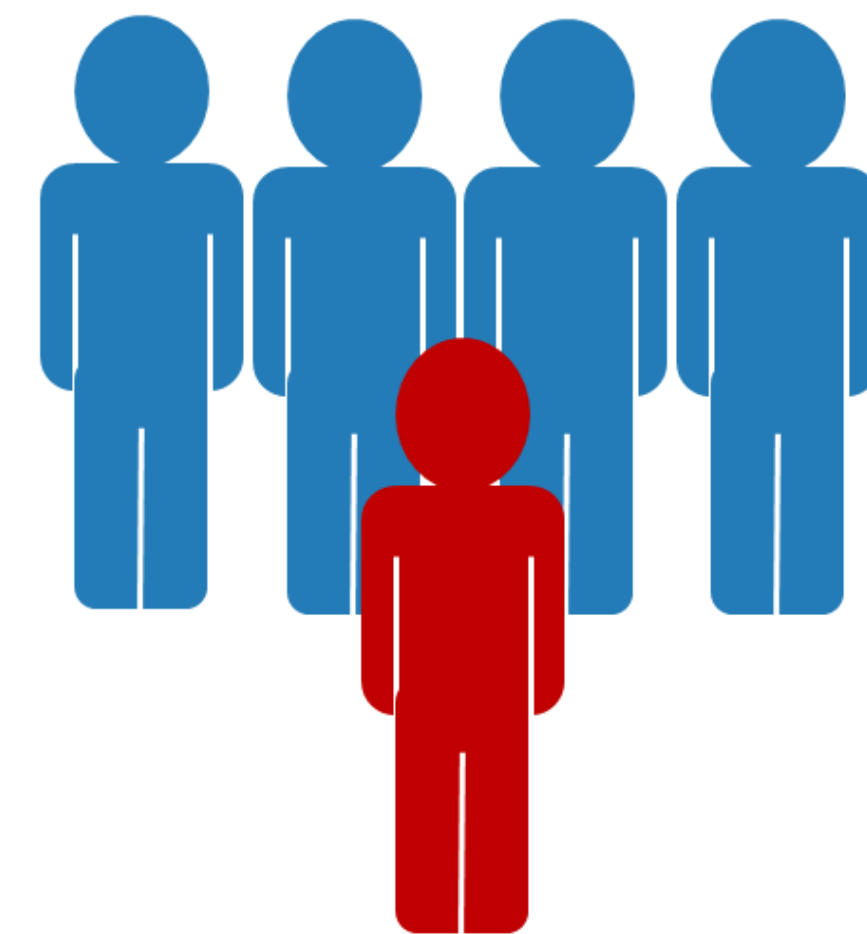




Motivation

Annually, more than 1 in 5 U.S. adults experience mental illness¹.

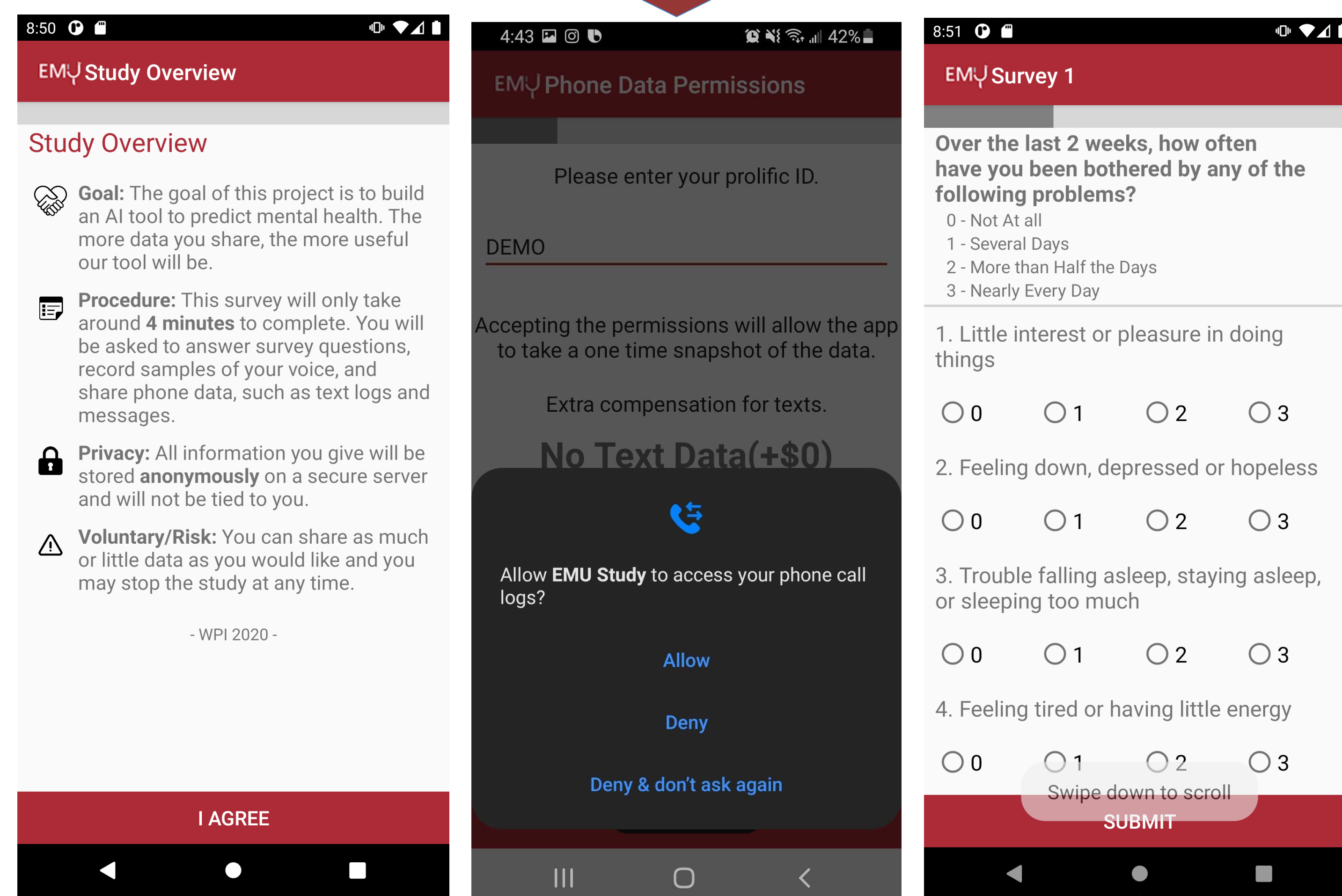
Text message **content** is useful for depression screening² but has **privacy concerns**.



How useful is **text reply latency**³ for screening?

Data Collection

Participants were asked to share their text logs.

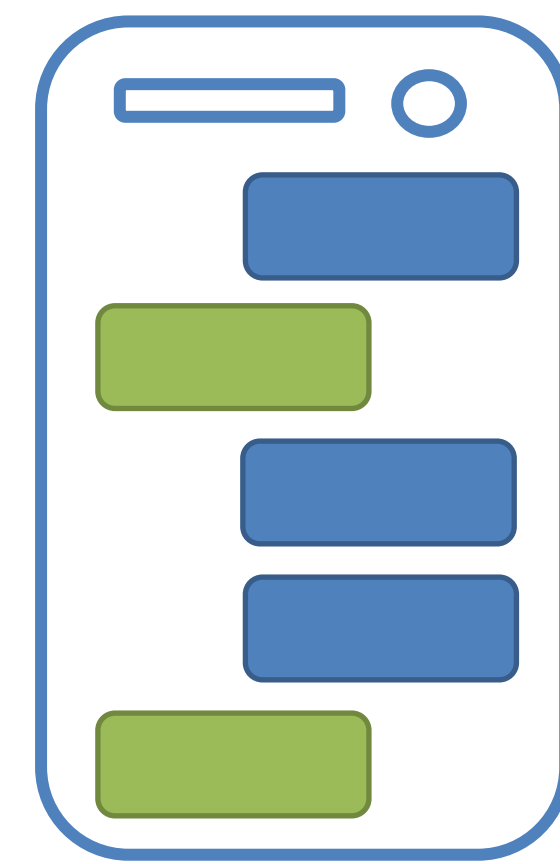


PHQ-9 depression screening survey⁴ and GAD-7 anxiety screening survey⁵ used to label data.

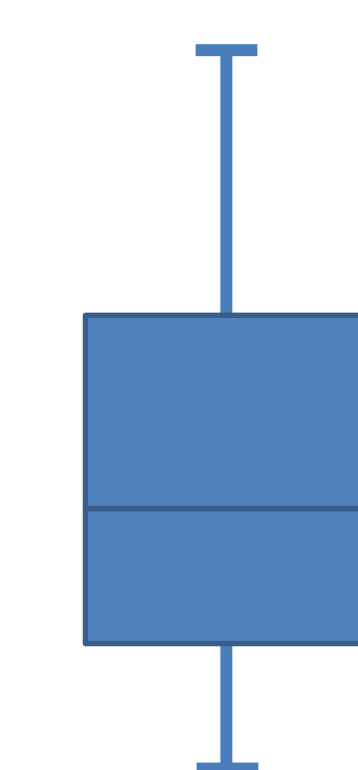
Dataset	Year	Data Labels	P
DepreST-CAT ⁶	2021	Depression, Anxiety	49
Moodable ⁷ /EMU ⁸	2017-19	Depression	46

Participants P with 7+ reply latencies in 2 weeks.

Reply Latency



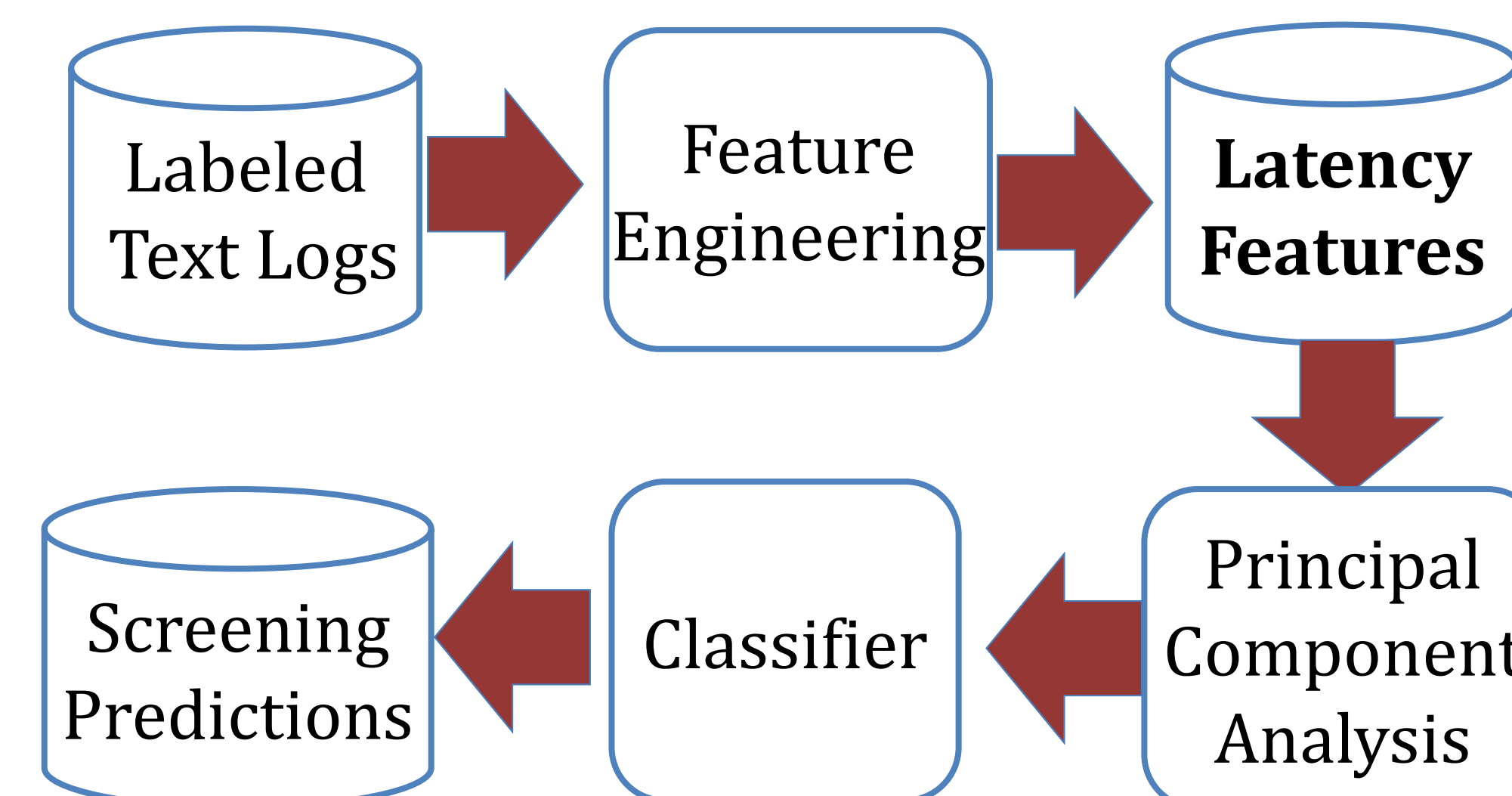
Reply latency is the number of seconds between receiving and sending a text



For each participant:

1. Number of contacts
2. Number of replies
3. Min and Max latency
4. 10%, 25%, 50%, 75%, 90% quantile latency

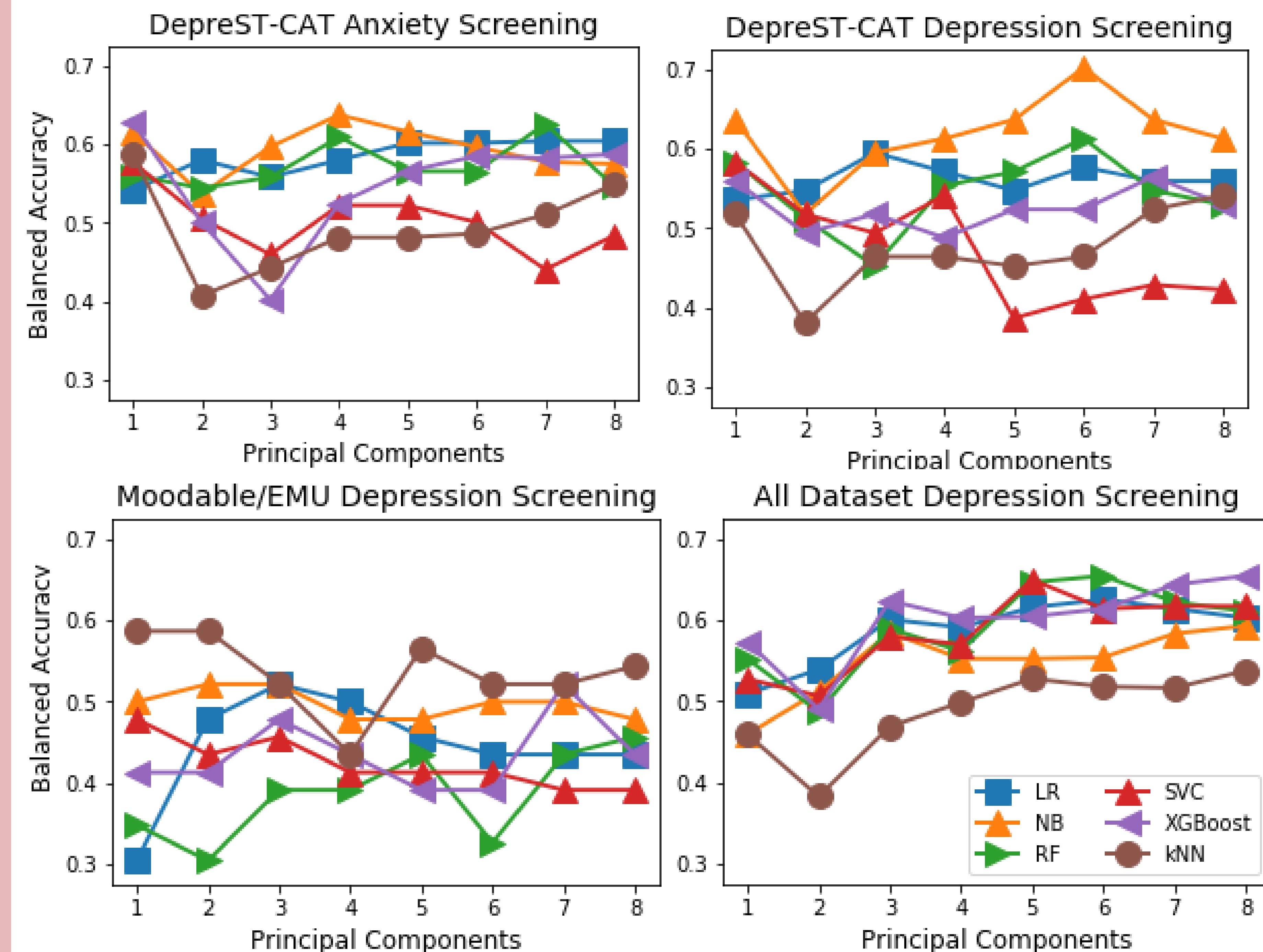
Screening Methodology



Classifiers

- LR = logistic regression
- NB = Naïve Bayes
- RF = Random Forest
- SVC = Support vector Classifier
- XGBoost = eXtreme Gradient Boosting
- kNN = k-Nearest Neighbor

Anxiety & Depression Screening Results



Dataset	Data Label	Bal. Acc.
DepreST-CAT	Anxiety	0.64
DepreST-CAT	Depression	0.70
Moodable/EMU	Depression	0.59
All datasets	Depression	0.66

Evaluated using **leave-one-out** cross-validation

Reply latency features are promising for passive multimodal screening due to being privacy-preserving and **generalizable**.

Published in: ML Tlachac, SS Ogden, "Left on Read: Anxiety & Depression Screening with Reply Latency", UbiComp, 2022

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